

Signed Language Proficiency And Academic Achievement Of Deaf Children In Special And Integrated Primary Schools In Addis Ababa

Dr. Tesfaye Basha Ludago

E-mail: tesfayeask@yahoo.com

Abstract

The purpose of this study was to investigate the academic achievement of deaf children in special and integrated primary schools in Addis Ababa City Administration. This study used mixed research methods to collect diverse types of data. The study contained administering Signed Amharic and English proficiency task, questionnaire, 8th grade Primary School Leaving Certificate Examination results, classroom observation and interviews. For quantitative data collection (n = 76) deaf participants were involved. A total of 20 participants were involved in the qualitative part of the study. The participant included teachers of the deaf, deaf students and school principals. The finding revealed that in teaching and learning process, limitation of sign language is prevalent problem of signing and academic achievements. This shows that the schools are not linguistically rich to facilitate sign language acquisition for deaf learners. Furthermore, the finding of the study revealed that the contribution of Signed English and Amharic/ Total Communication in the development of natural sign language for deaf children were unsatisfactory. The results also indicated that special schools deaf learners performed better sign language proficiency and academic achievement than those of the integrated schools. Besides, the findings revealed that the high signed proficiency group demonstrated higher academic achievement than the low proficiency group. This shows that sign language skill is highly associated with academic achievement. If we need our deaf students perform better in sign language

and academic achievement and to keep quality education introducing bilingual education system early is essential. In addition, to empower deaf learners in sign language and academics institutions must produce competent teachers with literacy skills.

Key Terms:

Signed Language proficiency; Signed Amharic; Signed English; Academic Achievement; Total communication

Introduction

My eight years experience in teaching English language in the elementary school for the deaf has convinced me that the problem was from our teaching system of English and Amharic languages. And our education has been taken for granted with little attempt at critically looking into the teaching system and consciously and cooperatively trying to change our ways of teaching the deaf students. It is no good blaming students with hearing impairment to poor performance of literacy, sign language and academic achievement. Poor input__ poor outcome is mentioned issue. If they fail to achieve and if we do not try to find out what it is that causes the failure and correct the situation, the blame would be upon the teachers and teacher training institutions. .

It seemed to me that the key way out to many of deaf education problems is criticizing ourselves

and improving our ways of teaching, freely discussing our approaches on a regular and special school basis with an aim to exchanging views and experiences by conducting research of the kind I have attempted. There is a need for better understanding of the problems of deaf students and making them competent students in reading and writing, in their native language (sign language), and helping them advance in their academic performances. Reading and writing in schools received less attention; however they are crucial for deaf learners. We would be forced, then, to know the level of our deaf students' achievements in their native language proficiency and in academic achievement.

In Ethiopia, a number of reform initiatives have been undertaken in general education to promote school improvement and student's achievement. The reforms have given priority to general education and have served the larger majority of pupils. Ethiopia's education system ignored reform in the deaf education. To this effect, the academic achievement of deaf learners has historically lagged behind that of their hearing peers (Allen, 1986). In other words, the field of deaf education has not given due attention to a similar reform to improve the education of its learners. Due to lack of early appropriate sign language and literacy intervention and receipt of proper accommodation, deaf children have reached high school age without understanding subject matters they need to acquire (Tesfaye, 2004; Marshark & Spencer, 2003).

Hence, appropriate educational services can be detrimental to the academic and social outcomes of all deaf students. In this regard, Siegel (2008) states communication is at the heart of what human beings do; it defines and gives meaning to our emotions, beliefs, hopes, creativities, and life experiences. Without communication, a child is lost in the joys of human contact, the ability to connect thought and symbol into language, and the beauty of learning. The effective development, understanding, and

expression of language are fundamental to any educational and social experience and are particularly crucial for deaf children (Girma, 2008).

In this connection, communication, education and social growths depend on a language-rich environment, one with ongoing, direct, and age-appropriate language opportunities. According to Antia et al. (2005), we should give importance for the communication of the deaf children since an effective, communication-driven system will meet the needs of all deaf children. If the communication goes awry, it affects the intellectual growth, social interaction, language development, and emotional attitudes, all at once, simultaneously, and inseparably. The language problem is one of several problems. Therefore, efforts should be made to make school life enjoyable for the deaf learners. Seemingly, (Cummin, 1986) explained that sign languages allow deaf people to match the skills and abilities of hearing people in communication, cognition, and to empower deaf child in learning.

In his other work, he tried to say "concepts and knowledge developed in the first language transfer easily to the second language; school performance and curriculum attainment are raised when the first language is celebrated rather than devalued" (Cummins, 1981, P. 20). In support of Cummins, Ahlgren (1984) too, says "school administration must, therefore, ensure that in these circumstances, the school environment is linguistically rich to facilitate rapid and easy Sign Language acquisition while at the same time using it to deliver curriculum content".

According to Wilbur (2000) preparation for life in two cultural and language communities is a principal goal for deaf learners. He added that "the development of sign language skills is fundamental to life objectives but is also fundamental to the objective of providing uninhibited access to academic achievement via a fully accessible language and a base for

acquisition of second language via reading and writing sign language fulfils different functions for deaf pupils”. Sign language is the primary tool for gaining knowledge and is the language used in direct communication with others. Furthermore, Svartholm (2010) addressed that it primarily completes the function that are distinctive of written language and academics dialogues. The researcher gives details that one significant assumption pertaining to the role that sign language has as a natural language is that it functions fine for the functions that are typical of written language, the deaf students given that they have sufficient access to it. Furthermore, Vernon and Koh (1971) conclude that “early exposure to sign language contributes to deaf students’ academic performance”.

An early study of the outcome from the new bilingual approach was published in 1993 (Heiling 1993). In this study the social development and academic achievement levels of orally educated deaf children were compared to those of deaf children educated with sign language. Differences between the two groups were distinct. The signing children performed significantly better in academic tasks including in their understanding of written Swedish. It has also been argued that because sign languages are not used in an academic discourse, there is no positive transfer of skills from sign language even in the cases that it is L1. This means that there is no particular benefit in academic achievement when having an L1 without literacy. This becomes a serious disadvantage in the absence of a typical L1 as is the case for the majority of deaf students.

In Germany, Gunther et al. (2004) reported that deaf children in a Hamburg bilingual program benefited from their advanced proficiency in German Sign Language (DGS) in two ways. On one hand, they obtained general knowledge, namely world knowledge, and knowledge of story grammar. On the other, they borrowed SL structures to compensate for temporary gaps in written German. In summary, there is considerable evidence that earlier availability of

language enhances language development, which, in turn, should support academic growth during the school years.

The data on academic achievement of regular students who are deaf shows that they have higher scores than deaf students learned in special schools (Allen, 1986). Within regular schools, deaf students who spend more time in general-education classrooms have higher scores than students who receive less education in public classrooms (Reich, Hambleton, & Houldin, 1977). However, it is not clear whether their achievement is a consequence of their educational placement or the initial reason for such placement. Kluwin (1993) suggests that “while, initially, more capable students are placed in general education classrooms, exposure to challenging curriculum and peer pressure can additionally have further positive effects on their achievement”. Karchmer and Mitchell (2003) reported “the Stanford reading comprehension scores of 8-year-old and 15-year-old deaf students in special and public schools. Public-school students were further divided between those who received minimal instruction in general-education classrooms and those who received substantial instruction in general-education classrooms.

Although the median score was highest for students who received substantial instruction in general-education classrooms, Karchmer and Mitchell noted that “the spread of scores was wide at both ages and in all settings. Thus, while there appear to be academic benefits for some students attending general-educational classes, the extent of these benefits is not clear”. Kluwin (1993) reported the results of a 5-year longitudinal study of achievement of 325 adolescents from 15 public schools. He consolidated reading, writing, and math measures for an overall academic achievement score. Achievement was significantly different across degrees of general-education instruction: Again he summarized that students who regularly attended public classes had the supreme change in scores followed by students

in self-contained classrooms. Students who attended only one general-education class had the lowest change in scores and the lowest adjusted achievement scores. However, regression analyses demonstrated that most of the variance in achievement was due to demographic variables (hearing loss, ethnicity, and gender) with only 2% attributable to educational variables such as placement or curricular track.

Statement of the Problem

In Ethiopia, schooling for students with hearing impairment is evolving at a fairly rapid rate due to educational and legal changes in the country. In most cases, these changes might have its own contribution in giving access to the education of the deaf. Currently, special schools and integrated schools for deaf children are increasing in number gradually. These opportunities and challenges reveal a need to re-think about academic achievements and signed language proficiency in current school practices. This requires an in-depth study in the area of deaf education examining their academic achievement in integrated and special elementary schools.

Hence, focusing on deaf education, this study attempts to examine signed language proficiency and academic achievement of deaf children in special and integrated schools in Addis Ababa City Administration. Its objective is to investigate signed language proficiency and the academic achievement of 8th grade deaf students in four primary schools. The study focused on signed language proficiency and academic achievement of the 8th grade Primary School Leaving Certificate Examination (PSLCE) score as a measurement of deaf learners. PSLCE examination results of the 8th grade students in Ethiopia and provide the main measure of elementary school performance used by the government. Deaf learners were educated in programs that stated the use of Total Communication (TC) approach to all instructional system. For the purpose of this

study, Signed Amharic/English mode of communication was used to assess their proficiency.

Therefore, regarding the purpose of the study, the following basic research questions are posed.

- 1) Is there statistically significant difference in academic achievement between integrated and special schools deaf children?
- 2) What is the relationship between Signed Amharic/English proficiency and academic achievement of deaf children?
- 3) Is there statistically significant difference between high and low signed language proficiency groups in academic achievement?

Methods

Participants

The participants for the main study included deaf students, teachers of the deaf, and principals from the four schools. 16 teacher participants and 4 principals were working at special schools for the deaf and integration schools in Addis Ababa city Administration involved for the interview. To maintain all affairs of confidentiality, the schools were assigned numbers: 1, 2, 3 and 4. From the four schools participated in the study were: 19 deaf students (7 male and 12 female) from School - 2, 12 deaf students (10 male and 2 female) from School - 4, 25 deaf students (15 male and 10 female) from School- 1 and 20 deaf students (10 male and 10 female) from School -3. The sum of 76 deaf students participated in the study. Generally, 96 participants were taken as sample for this study. All of the deaf students had hearing losses ranging from severe to profound.

Participant Selection Procedure

Deaf students were eligible to participate since they met the following requirements at the time of enrollment in the study: (a) they had an

identified bilateral hearing loss, (b) they did not have additional disabilities, (c) they attended either integration schools or special schools for two or more years, and (e) they were in grade 8 in 2010/2011 school year, (f) they were all deaf students enrolled in grade eight in four schools and (g) they had from severe to profound deafness (70 dB above hearing loss on the better ear). The researcher used non-random sampling technique.

While selecting the teacher participants, the following criteria was addressed: (a) the teachers should have, at least, a certificate in Special Needs Education, (b) they should have more than five years teaching experience in a particular centre, and (c) they should be willing to participate in the study voluntarily.

Instruments and Procedures

Signed Amharic and English Tasks:

The researcher together with grade eight language teachers developed the reading passages to assess signed language proficiency. To check the content validity, the test was evaluated and commented by Alpha and Hosanna deaf school teachers whether the items prepared to 8th grade deaf students were appropriate to their cognitive and linguistic capability to sign.

The researcher used a Signed Amharic/English proficiency task for all selected grade eight deaf students. Participants were brought individually to the room to sign written text where a camera was used to capture the sign language sample. The camera focused on the participant so that the participant would be seen on the full screen while signing. In this way, coders could view participants signing.

For reliable and valid assessment of individual sign language proficiency, establishing clear specific checklist is critical. For this Brennan (1992) grouped signs into five parameters (hand shape, location, movement, orientation and non manual components). Similarly, Paulos (2012)

states that all sign languages including Ethiopian sign language had five gestural features that are known as the *parameters* of sign production. To assess high and low sign language proficiency of deaf learners Brennan model was used. To that end, the deaf students were assessed in the following five sign language linguistic parameters: handshape, location, movement, orientation and nonmanual components.

Two sign language experts native speakers of SL and one of them was post-lingual assessed the deaf by rating narratives on the bases of parameters on a scale from 1 to 5 point. To control the order effects the 105 words of Amharic, 72 words of English were printed from the reading texts that were equally divided over the raters. The skills were facilitated by the design of the Signed English/ Amharic system. Scoring included right and wrong assessments points for each word/sign. On the basis of frequency distribution of their test scores, children were classified as high proficient or low-proficient in sign language.

Out of 105 words those students who scored right for signed Amharic and rated in frequency distribution from top groups 76 (61.1%) to 99 (100%) were selected as high proficiency groups and deaf students who scored below 55 (39.5) were selected as low proficiency signed Amharic bottom groups. To avoid boarder line cases and possible confusion that may arise from the inclusion of these cases in the analysis, 15 (20%) students were excluded. Similarly, out of 72 Signed English words, those students who answered 40 to 72 of the words correctly were categorized in the high proficiency group. Those students who answered 29 of the items or less were categorized in the low proficiency group. Cohen's Kappa's coefficient was 0.66 indicating substantial agreement between raters (Landis and Koch, 1977).

Primary School Leaving Certificate Examination Achievement Score : The study of the differences in academic performance

among four regular primary schools for the deaf students used regional academic achievement test scores for students taking the 8th grade Primary School Leaving Certificate Examination Achievement Test (PSLCE) in 2010/2011.

A descriptive statistics and the Pearson's product moment correlation coefficient (r) were used to measure the gap between the academic performances of the high and the low proficiency groups and special and integrated school deaf students. For correlation comparison purposes, there were four programs: two special day schools and two integrated schools of the deaf students. An additional measure that was taken to assure the strength of this research was a comparison with the grade 8th PSLCE of special schools and integrated schools for deaf students. In order to measure the difference between special and integrated schools, the deaf student performance data quantifying served as a baseline to compare with performance on in the 2010/2011 data.

Questionnaire for Students: The researcher developed detailed questionnaire to deaf participants that included questions about personal profiles, sign language and academic achievement. The academic achievement questionnaire demonstrates that the deaf participants signing and academic difficulties during teaching and learning processes. Questionnaires were distributed only for students who attended in the grade level required for the study.

Interviews: The purpose of this semi structured interview was to gather data on the teachers' and deaf students' perception about teaching literacy. The instrument was especially developed for deaf students, teachers and directors of the schools. The semi-structured interviews were written in Amharic language and given to linguists to review.

Observation: The researcher designed a non-participatory observation guide based in

Creswell (2007). Key themes of observation had been developed prior to fieldwork. As a method, it required the researcher to go in search of information in the learner natural settings. The natural settings included selected special primary schools for the deaf and integrated school classrooms. For all the observation, observation checklist was developed and used.

Data Collection Procedure: The data collection procedures involved both numerical as well as textual information. In this regard, the intention here is to mark the final data represents both the quantitative and qualitative information (Lodico, Spaulding, & Voeglteh, 2006). In other words, the rationale for using mixed method design was to triangulate the findings from different data sources such as Signed Amharic and English proficiency tests, primary school leaving certificate examination score, observation and face-to-face interview reports. Such a triangulation helped the researcher to use mixed methods and thereby enhanced the trustworthiness of the analysis by complementing and compensating the weaknesses of one method through the strength of the other.

Data Analysis

Comparative correlation data analysis and qualitative analysis methods were used in the analysis of the data. The first aim was to determine whether the academic performance of students of special schools had differences when compared with the integration schools and high and low proficiency groups of deaf students in the 2010/2011 school year. As mentioned earlier, the primary objective of the study was to determine whether there was statistically significant difference in academic achievement between deaf children in integrated schools and special schools for the 2010/2011 school year. Second, Signed Amharic/English proficiency assessment task test score, academic achievement score of grade eight and questionnaire scores were compiled and entered in to the statistical software program known as

SPSS, version 15.00 to calculate the mean and standard deviation for each category. The third objective was to determine whether there was any relationship between sign language proficiency and academic achievement of deaf students.

The data were analyzed using descriptive statistics and correlation analyses. A descriptive statistics and the Pearson’s product moment correlation coefficient (r) were used to measure the mean standard scores for all schools and the mean standard scores to specify any significant differences between them.

In this study, qualitative approach was used to analyses the data. The interviews were transcribed verbatim. A constant-comparison method (Strauss & Corbin, 1994) was used to examine the similarities and differences in reflections across the participants. The

Table 1

Descriptive statistics for right and wrong responses of Signed Amharic and English mean score

High and Low Proficiency		Scores of Signed Responses			
		Signed Amharic		Signed English	
		Correct response	Wrong response	Correct response	Wrong Response
Low Proficiency	Mean	34.50	70.60	18.67	53.10
	N	30	30	30	30
	Std. Deviation	11.936	11.984	6.748	7.260
High Proficiency	Mean	90.42	14.45	52.93	19.07
	N	31	31	30	30
	Std. Deviation	6.707	6.913	7.697	7.697
Total	Mean	62.92	42.07	35.80	36.08
	N	61	61	60	60
	Std. Deviation	29.764	29.906	18.709	18.695

information collected from the four schools gave the research diversity, which helped the researcher to identify the commonalities and differences in lived experiences that helped in capturing the themes as they emerged.

Results

Part I: Quantitative Results

In this study, careful to note that “the key function of this signed form of English and Amharic words would be to serve as a model for English/Amharic text, rather than as the primary language for face-to-face communication.” This study investigates how deaf learners understand written language through sign supported speech mode of communication and the content of the text and assess the proficiency of sign language development in high and low scoring procedure.

Table 1 shows descriptive statistics for the right and wrong Signed Amharic and English in High and low proficiency groups. The mean score for correct response in Signed Amharic of high proficiency group was 90.42 and wrong response was 14.45. In contrast, low proficiency groups mean score for correct response in signed Amharic was 34.50 and wrong response 70.60.

The mean score for correct response for high proficiency group Signed English (52.93) and wrong response was 19.07. In contrast, correct Signed English low proficiency group mean score was 18.67 and wrong response was 53.10. The total mean score of correct response in Signed English was not significantly different from wrong response in Signed English. This implies that deaf learners had difficulty of

understanding English written materials to sign than Amharic written materials.

Students Academic Achievement Result

The main objective of this study was to examine 8th grade deaf students’ academic achievement based on primary school leaving certificate examination (PSLCE) score as a measurement of their academic achievement. Moreover, the study intended to investigate the variables that influence the academic success of deaf students in integration and special primary schools. Before examining the correlation of academic performance with various demographic variables, the analyses of significance of mean difference for four groups were done to foster understanding of the variation in relationships.

Summary scores for academic achievement by four schools

Name of School		Amharic score	English score	Math score	Biology score	Physics score	Chemistry score	Social studies score	Civic Studies score
School 1	Mean	21.64	23.68	16.80	32.08	23.32	24.68	32.72	47.80
	N	25	25	25	25	25	25	25	25
	Std. Deviation	5.809	3.902	2.693	4.591	4.441	2.577	2.792	3.926
School 2	Mean	15.89	19.16	18.00	18.47	20.05	20.84	17.32	32.37
	N	19	19	19	19	19	19	19	19
	Std. Deviation	4.653	6.176	5.260	2.970	5.369	6.094	4.321	10.286
School 3	Mean	16.00	16.50	19.75	22.95	20.95	17.55	19.05	29.95
	N	20	20	20	20	20	20	20	20
	Std. Deviation	4.690	7.207	8.595	8.648	7.236	5.978	7.817	11.062
School 4	Mean	20.00	22.83	17.33	16.08	19.92	18.67	17.92	40.75
	N	12	12	12	12	12	12	12	12
	Std. Deviation	5.343	3.563	3.339	2.575	5.534	4.887	4.358	10.855
Total	Mean	18.46	20.53	17.96	23.75	21.34	20.89	22.93	38.13
	N	76	76	76	76	76	76	76	76
	Std. Deviation	5.726	6.165	5.539	8.279	5.752	5.670	8.556	11.710

As shown in the table 2, School - 1 student are found to be better in academic performances as revealed in mean score of all four schools, except in mathematics. This better academic performance occurred because of special support for the deaf students in the school. May

be the teaching system, early exposure and school experiences could have contributed for their better achievement. Next to the school – 1, School - 3 showed a better performance than other schools most of the subjects.

Table 3

Summary mean scores for academic achievement by integration and special schools

Schools type of the respondent		Amharic score	English score	Math score	Biology score	Physics score	Chemistry score	Social score	Civic Studies score
Special Schools	Mean	19.16	21.73	17.32	26.20	21.91	23.02	26.07	41.14
	N	44	44	44	44	44	44	44	44
	Std. Deviation	6.01	5.44	3.99	7.87	5.075	4.79	8.47	10.61
Integrated Schools	Mean	17.50	18.88	18.84	20.38	20.56	17.97	18.63	34.00
	N	32	32	32	32	32	32	32	32
	Std. Deviation	5.243	6.78	7.11	7.72	6.57	5.53	6.67	12.04
Total	Mean	18.46	20.53	17.96	23.75	21.34	20.89	22.93	38.13
	N	76	76	76	76	76	76	76	76
	Std. Deviation	5.72	6.16	5.53	8.27	5.75	5.67	8.55	11.71

As shown in table 3, deaf students who received their instruction in special schools had higher academic achievement than those who receive instruction in integration schools except in mathematics. Deaf students in integration schools appear to score below their counterpart special schools. This is happened due to

different methods of teaching systems of the school or other factors, such as teaching experience of deaf students’ teachers, special support, early exposure of sign language input, and other factors. In the next section, table of independent sample test is used to analyze mean score in high and low proficiency group by academics.

Table 4

Independent sample t-test for high and low proficiency group in Signed Amharic & English by primary school leaving certificate examination (PSLCE) score

	Proficiency Groups	N	Mean	Std. Deviation
Amharic score	Low Proficiency	30	17.77	5.28
	High Proficiency	31	19.06	5.92
English score	Low Proficiency	30	18.97	5.16
	High Proficiency	31	22.16	5.46
Math score	Low Proficiency	30	16.20	3.93
	High Proficiency	31	19.03	4.36
Biology score	Low Proficiency	30	22.17	7.28
	High Proficiency	31	25.16	7.98
Physics score	Low Proficiency	30	19.83	4.70
	High Proficiency	31	22.65	5.64
Chemistry score	Low Proficiency	30	19.57	5.84
	High Proficiency	31	22.32	5.49
Social studies score	Low Proficiency	30	21.67	8.55
	High Proficiency	31	24.68	7.63
Civic Studies score	Low Proficiency	30	34.53	12.24
	High Proficiency	31	40.71	10.06

Table 4 presents the mean and standard deviation for the academic achievement score by high and low proficiency groups in signed language. The results of mean score indicated that students with high signed proficiency group performed higher mean score in all academic subjects than low signed proficiency groups of deaf students. The means results revealed that proficiency in signed language makes statistically significant difference in academic achievements. This displays that deaf students

who have high signed Amharic/English proficiency had better academic achievement, specially, English, Maths, Physics & Civics primary school leaving certificate examination (PSLCE) score. This shows that there is high correlation between high signed proficiency with high academic achievement $P > 0.01$. We can conclude that better sign language proficiency contribute to better academic achievement.

Table 5

Summary score for academic achievement by severity of hearing loss

Academic Subjects	Degree of hearing loss	N	Mean	Std. Deviation
Amharic	Severe	15	19.60	5.221
	Profound	61	18.18	5.850
English	Severe	15	21.40	4.641
	Profound	61	20.31	6.500
Math	Severe	15	17.87	3.833
	Profound	61	17.98	5.909
Biology	Severe	15	25.53	8.610
	Profound	61	23.31	8.209
Physics	Severe	15	22.07	2.738
	Profound	61	21.16	6.28
Chemistry	Severe	15	21.93	4.55
	Profound	61	20.64	5.91
Social studies	Severe	15	26.53	8.84
	Profound	61	22.05	8.32
Civic Studies	Severe	15	44.53	7.49
	Profound	61	36.56	12.06

Table 5 presents the mean and standard deviation for academic achievement with regard to the degree of hearing loss of the deaf. The results showed that severe deaf learners demonstrated better mean score than profound deaf learners in their academic achievement. These imply that the residual hearing condition may help for better academic performances.

Results of the Deaf Students Questionnaire:

For the question asked whether better sign language skill contribute for academic achievement or not 59.2% of the respondents said ‘yes’ and the remaining 40.8% said ‘no’. This could clearly indicate that majority of participants have understood signed language skill contribute for their academic achievement, and they realize that better sign language proficiency improves their academic performances. In addition, the results show that

sign language skill seems to be the most important skill for academic achievement from the deaf student’s point of view. This was attributed, in part at least, to the possibility of transfer between the academic, such that skills acquired in signed languages could positively influence academic performances.

When asked if sign language ought to be given as a subject in all grade levels 80.3 % of 8th grade deaf students agreed that sign language used to be given as a subject in all grade levels. They justified learning sign language as a subject helps deaf students update their sign language proficiency, learn new sign language and help to develop sign language every time. In addition, the deaf respondents forwarded that learning sign language as a subject introduces with new terms and other technological and abstract words and facilitates academic learning.

Furthermore, it qualifies deaf people with strong foundation in their mother tongue (sign language), and helps deaf people to understand their second languages and facilitates the communication skill of the deaf learners.

Forty eight percents of deaf learners reported that understanding the main idea, reading and writing were the major difficulties that were facing during all academic subjects learning. However, 27.6% of deaf students said understanding the main idea was the main difficulty and the remaining 17.2% reported that they faced reading difficulties. This indicates deaf students have vocabulary limitation to understand the main idea of the subject matter. Poor vocabulary condition, poor reading strategies and skills limit their ability to acquire words in their context.

Deaf students had positive attitude when materials are visualized and emphasized active learning during teaching and learning process. The data shows that most of the deaf students (80.2%) had positive attitude if teaching and learning environments are led by these activities. This data revealed that the students were aware of visualized curriculum materials and participant learning approaches improve their academic achievement.

Part II: Qualitative Result

Interviews of Teachers and Deaf Learners

In relation to signed language proficiency, deaf students had problems in signing in teaching and learning process. Deaf interviewees in all of the four schools addressed that in teaching and learning process, lack of adequate sign language depictions for all vocabularies prevailed in all subject areas. The most serious problem was the sign language limitation. This resulted in an inability to understand and identify the meanings of the words and the content of the subject matter. Similarly, deaf interviewees suggested that a better sign language skill is highly important for better academic

achievement. They indicated that the limitation of the sign language affected their academic and their literacy skills.

Regarding the academic achievement of deaf learners, most interviewees stated that language exists in all school activities of deaf students. Language is used as an instrument to change their behavior in academics. For behavioral change language is basic. In every school, in every academic subjects language is a pillar. Therefore, language is a source of their weakness or strength. For academic weakness or strength, language has a great contribution. Furthermore, they reported that the major problem in academic achievement is the limitations of vocabulary to express and to understand ideas. The way out for this is access to adequate input of meaningful vocabulary as early age as possible. In addition, all the interviewees stated that getting the meanings of the vocabulary in each subject contents were the most serious problems which affected their understanding and delayed their knowledge of comprehension. They stated that when their language was limited their understanding in academics will also be limited. Therefore, they forwarded that empowering deaf learners in sign language proficiency and literacy skill will improve their academic performances.

Most interviewed teachers reported that deaf students had difficulties of sign language in the learning process. The difficulties that occurred sign language representation of all words/terms. Sign symbols are not adequate for deaf learners to satisfy their learning particularly in teaching and learning process. This limitation of sign language affects their communication, academic achievement and literacy skills. These teachers testified that those who had low sign language ability showed low literacy and academic achievements.

During teaching and learning process teachers used signed languages, but they used copy of spoken language (Exact Signed Amharic or English). In other words, they are interpreting

word by word. They use Total Communication. The sign language was engulfed by this Total Communication approach. The contribution of this approach to sign language development was very limited. This limitation compels deaf students to sign words wrongly related or not related particularly in reading activities. The sign language is under the influence of hearing teachers in educational processes. Teachers of the deaf reported that deaf children's understanding of written materials is incomplete, fragmented and they do not receive the quality message properly due to mixed communication. Teachers' use of sign languages was not satisfactory for deaf learners. This indicates that the gap of communication between teachers and deaf learners exist due to the limitation of total communication to deliver the desired information. If sign language education is provided as subject in every grade level, the gaps of communication may be narrowed and newly emerging words may soon get representation of sign language in teaching and learning process. The interviewees revealed that from their long experiences of teaching the deaf they learned that total communication is not useful for deaf learners' language development.

If the child is unable to understand words properly, he cannot learn the academics effectively. Therefore, natural sign language for a deaf child is a key facilitator for literacy and academic achievement. All the teachers forwarded that language plays a key role for academic achievement and literacy development. They addressed that early laying foundation in sign language skill is the basic for deaf children academic and literacy development. Some interviewees explained that children who began learning sign language in their early age showed better sign language expression than later beginners. They added that early sign language beginners were more computing in sign and academics than aged learners.

Concerning sign language improvement in teaching and learning process, the interviewees stated that sign language as spoken language is growing and changing. The growth of the both languages is the same. Language teaching system for deaf should be changed from preschool to higher school level. Teachers have to gain adequate knowledge in sign language skill so that they could empower deaf people in sign language skills. For deaf learners, foundation of sign language should be laid beginning from preschool age. In addition, providing scheduled times for sign language development programs such as sign language clubs, sign language development teams and appropriate supplementary teaching recourses in the schools is of great help. They suggested providing sign language as the subject in each grade levels will contribute for the sign language development.

Academic Achievement and Difficulties

Most of the interviewee teachers, deaf learners and principals stated that all academic subjects require language skills. When the language skill of the individual is in good status, he/she can get all subjects in a ways he/she acquires the language skills. If the language skill is imperfect, the academics he/she gets in that language would be very limited. They added that the knowledge we received in second language and in first language is not the same, we might miss some information in second language because understanding the second language with its culture is sometimes difficult. For the deaf understanding the second language is difficult. This language barrier could affect their academic performances. The participant stated that reading and writing difficulties are other major problems during academic teaching and learning process. In each academic subject they face with a new problem. Inadequate literacy skill and inadequate sign language are some of the major barriers of academic achievement. The sign language limitation also has influence on academic achievement of deaf learners.

On the other hand, the participants explained that deaf learners require brief explanation with signing, brief explanation with visual aid, they need repeated teaching. This also requires extra periods which were not considered by curriculum designers. In most of the deaf schools, the contents of subjects were not covered properly. They teach deaf learners selecting from the text books. If they go through all the pages, they cannot cover the entire text book at all. This also affects their academic achievement. No quality education was given for deaf learners; most of the deaf education system was not full-fledged by human and material resources. Teachers were not well qualified to teach deaf students.

When most interviewee teachers, principals and deaf learners described most of difficulties in academics teaching and learning process, they said that most teachers lack the skills of teaching deaf learners and were not capable to teach and are not ready to teach. Most of the time, teachers were not ready psychologically and energetic to teach deaf learners. They added that schools lack energetic teachers who teach language for deaf students. In such environments, one cannot measure the ability of deaf students in language and other academics. The knowledge, through language, is not properly imported to deaf children. The teachers who are coming to school are different subject teachers without awareness of teaching deaf students. This shows that academic achievement of deaf learners is crippled because of teachers' incapability of teaching and shortages of resource materials. In addition, the participant directors from schools stated that the major problem of the learners' academic achievement is the limitation of meaningful language input in all subject areas. The language input is the basis for reading, writing skills and academic achievement. This indicates that adequate literacy skill also leads to better academic achievement. Without meaningful language input, expecting a good academic achievement from deaf students may be waiting a seed from

uncultivated land. Cultivation of sign language, reading and writing skill is a foundation for academic achievement. Without understanding the language, one cannot expect a good academic performance.

In order to solve deaf children's academic achievements problem most interviewees suggested that empowering schools with skilled professionals of deaf teachers, empowering deaf learners in sign language, reading and writing skills and improving textbooks that invite all deaf learners. In schools teachers should be energetic and enthusiastic ability to support deaf children will narrow the barrier of academic achievement.

Outcome of Classroom Observation during the Instruction: Classroom discourse seemed to be oriented towards traditional methods of teaching (e.g. lecture methods, rapid question-answer method and drilling) because these methods are most of the time easy ways of teaching. In all school programs, the teaching method was traditional and did not encourage reading and writing skills for deaf learners. Lessons were predominantly characterized by question and answer, and telling methods. There were no structured reflexive conversations with students. The teaching learning process employed sign supported speech which involves translation of spoken language. There was little or no modification of curriculum and use of visual aids to support deaf students during teaching and learning process. Text books were packed with abstract language with no or few visual aids to help them and construct meanings. Textbooks were designed for normal pupils. Some activities require students to listen and record or speak. They are inappropriate for pupils with hearing impairment. There were no models, audio-visual aids and books with lots of picture and no science equipments to engage deaf learners with hearing impairments in experiments except wall pictures of human and animal anatomy in some schools.

All the participants of this study were highly concerned about limitation of signs for classroom use. There are no signs for certain abstract and scientific terms. Due to lack of signs, teachers tended to explain the concepts using informal signs that differ from one teacher to another and from one school to another. As a result there was no uniformity in teaching. There was no standard, and teachers came up with their own signs, changing the signs obtained from the previous teachers. When these students come from different schools with sign language background in post secondary schools, they faced with sign confusions.

Discussion

Signed Language Proficiency in Teaching and Learning Process

The main purpose of this study was to find out the effect of sign language proficiency in relation to academic achievement by deaf children. Based on the categories of high and low proficiency, 70.96% of special schools for the deaf students were high Signed Amharic proficiency contributors and similarly 63.33% of special schools for the deaf students were high Signed English proficiency group. The result show that significant differences in sign language proficiency in special and integration schools. This suggests that special school environment is linguistically rich to facilitate sign language acquisition than integration schools. Integration schools need a great attention of sign language proficiency development.

On the other hand, there is a significance difference between high and low proficiency correct and wrong responses in signed Amharic and English mean scores. In both languages, the high sign language proficiency group achieved a higher mean score than low proficiency group. This revealed that deaf students with high sign language proficiency could understand written materials better than low proficiency groups. This shows that sign language proficiency plays a role in understanding written literacy. The teachers' interview also confirmed that children

with better sign language skills could easily understand written texts.

One of the major findings from the study confirmed that there was a sign language limitation in teaching and learning process. All the deaf students, teachers and principals of the schools in their interviews reported prevalent problems encountering during signing and academic subject learning due to the lack of adequate sign language representation for all vocabularies in all subject areas. The classroom observation also confirms that sign language shortage in teaching and learning process prevailed. All the participants of this study were highly concerned about the unavailability of adequate signs for classroom use.

The classroom observation shows that teachers use simultaneous communication based on the English or Amharic word order to Ethiopian Sign Language (ETHSL). This deprives the linguistic development rights of the sign language. Teachers lack competence in sign language. These comments were consistent with the data which were collected through classroom observations and reflective journals. The finding is supported by the works of Andargachew (2008) who says that deaf students and their physics teachers seem to fail to establish common understanding because of lack of sign language. This is also supported by interview results of teachers. As to them, it is difficult to say deaf students are learning in real sign language. There is a sign language and deaf people interact with sign language whether the teachers use it or not, understand it or not. When they are communicating each other, they are using sign language but the school situation in reality obliges deaf students to use artificial language that does not support the development of sign language (Supalla, 1991) who against an artificial sign system. Similar to this finding is Ahlgren, (1984) reported that 'Signed Swedish' encountered problems in making themselves understood and in understanding deaf people especially when they were communicating with each other.

The observation revealed that classroom instruction took place to sign- based Amharic and English or simultaneous communication; in contrast, deaf use their natural sign language. If deaf children are exposed only to Signed English, Supalla (1991) explains they may exhibit "impaired potential for natural language acquisition and processing, impairment of their capacity to create and comprehend grammar, unless they are able to create their own linguistic structures/sign language".

One of the longest experienced teachers reported that *total communication was a "total confusion" for deaf students; it didn't contribute to the sign language development.* The other interviewee added that *it may be difficult to say deaf students are learning sign language. The sign language usage is under influence of hearing teachers and regular educational processes.* This shows that total communication did not function as expected like any other natural sign language. However, the natural sign language acquired by deaf children provides them the best access to educational content and the second language (reading and writing). According to Marschark (2009), children with deaf parents preferring natural sign language have larger vocabularies than those children who do not. The scholar admits to say that those with early and consistent exposure to sign language had larger sign vocabularies than those without such exposure. Therefore, providing sign bilingual strategy is very crucial. This strategy is based on linguistic and educational theories. The theory predicts that (language) skills that have been acquired through learning a sign language will facilitate the acquisition of reading and writing (Cummins, 2006). The approach of Cummins advocates for deaf children's need to acquire a natural sign language for cognitive development and as basic ground for second language acquisition. The impact of this on the structure of schooling is that the school must prepare the children for acquisition of a first natural language for second language acquisition, socialization and

development of world knowledge (Cummins & Swain, 1986).

Most of the interview participant teachers stated that language teaching system should be changed from preschool to high school level for deaf learners. This could focus on three areas. First, teachers should gain adequate knowledge in sign language, to empower deaf people in sign language skills. Second, the deaf learners' foundation should be laid with sign language beginning from preschool school age. Third, teacher training institutions should equip teachers with the sign language skill.

Academic Achievement

This study demonstrates that deaf students who receive their instruction in special schools have higher academic achievement than those who receive instruction in integrated schools. Deaf students in integrated schools appear to score below their counterpart special schools, except in mathematics. However, this finding is not consistent with the findings of (Allen, 1986; Reich, Hambleton & Houldin, 1977; Karchmer and Mitchell, 2003) that states public school students have higher academic scores than students educated in special schools. The researcher assume some factors that might contribute for this finding are infant stage of integration of deaf students, lack of trained professional who admit deaf learners, inefficient teaching method, late coming to school and lack of facilitation in integration schools. This is confirmed by the teachers of the public schools interview results. Furthermore, integration of deaf learners is in an infant stage and is not advanced as western in resources to support deaf learners. In addition, Adey (2008) reported that students with hearing impairment in primary school regular settings of Ethiopia disadvantage in academic education because of the communication problem, language problem, and the lack of support from stakeholders and insignificant number of trained teachers in public schools. Similarly Johnson, Liddel & Erting, 1989 and Seigal, 2001 reported that

many attribute their deficit in academic achievement to a system that does not provide quality communication-based educational programs for deaf children. Even so, it is becoming more apparent that rich communicative environments are necessary to help deaf students learning.

The results by mean score indicate that students with high signed language proficiency group performed higher mean score in all academic subjects than low signed language proficiency groups of deaf students. The mean score indicates the differences between high and low proficiency groups in academic achievement. This shows that deaf students who had high signed language proficiency had better academic achievement. This reveals that better sign language proficiency contributes for better academic achievement. The results of the correlation also reveal that there is a high correlation between high sign language proficiency with high academic achievement $P > 0.01$. This finding is consistent with Chamberlain & Mayberry (2000); Hoffmeister (2000) and Alegin (1997) that asserts a "...strong and positive relationship between high signing proficiency and academic achievement".

This finding is supported by other scholars such as (Akamatsu, Musselman, & Zweibel, 2000). According to these scholars, "... both effective early accesses to language "... and intensive exposure to print materials tends to have children with better literacy and academic achievement". Literacy skills for access to academic materials are built on the foundation of general language skills. This could be summarized as exposure to sign language enhances language development, which, in turn, should support academic growth during the school years. This study can now address the effect of the sign language on the academic achievement of deaf students.

On the other hand, the mean score of deaf students indicated that the majority of the deaf

learners were below average in their academic achievement. All academic subjects require language skills of understanding the meanings of the words, phrases and sentences. The limitation of sign language affects the reading comprehension ability and writing skill for deaf children. In turn, these limitations affect the academic performances of deaf learners. The interview results of deaf learners also reveal that the limitation of the sign language in academic achievements was the major problems. Significant language barriers can greatly hinder the education of deaf students. Marschark (2009) reported similar idea below expected performance on reading and writing and academics deaf children exposed to Signed English.

This study reveals that the major barriers to learning associated with deafness related to language and communication, which, in turn, profoundly affect most aspects of the educational process. However, teachers of the deaf in their interview revealed that teachers lack knowledge, skills and creativity on how to teach academics to deaf students. This was evidenced by classroom observation that frequent use of question and answer and telling methods. This lack of knowledge and skill in deaf education contributes to the already substantial barriers to deaf students in receiving appropriate education services.

On the other hand, deaf students reported that understanding the main idea, reading and writing were the major difficulties that were facing during all academic subjects. This shows deaf students had the vocabulary limitation to understand the main idea of the subject matter. Teachers' interview results also reveal that science terminologies are very difficult for deaf learners. This finding is attested by the works of Andargachew (2008). As to him, "... only 18.79% of the physics terminologies in the text book were clearly understood by the deaf students in 7th and 8th grade. Poor vocabulary condition, poor reading strategies and skills

limit their ability to acquire adequate knowledge of the context". Marschark & Hauser, (2012) addressed that poor reading and writing skills often contribute for lower academic achievement.

Furthermore, the other finding reveals that deaf students preferred using visualized teaching materials and emphasized the benefit of active learning and teaching. The data reveal that (80.2%) of deaf students agreed, and 14.9% of them undecided for the question that inquired using visualized teaching materials and active learning. In the other words, it is possible to conclude that most of the deaf students have a positive attitude if teaching and learning environment had been based on visualized active learning process. This finding shows that students were preferred of visualized curriculum materials and emphasized a deaf student-centered teaching approach than chalk and talk approach. This will contribute to improve their academic achievement. The majority of the teachers of the deaf reported that lack of appropriate resource materials for deaf students contribute for poor performance in academic subjects. Classroom observation also confirms that almost nil visual aid was used to support deaf learners during teaching and learning process.

This finding reveals that academic achievement is influenced by variations of age of onset. In addition, academic achievement depends on the degree of severity. Degree of severity is one of the influencing factors of academic achievement. This is consistent with the findings of (Karchmer and Mitchell, 2003) that identified that degree of hearing loss negatively impact academic achievement. As the teachers and deaf interview results reveal, sign language capacity to exchange information is not limited, but the problem is limitation of vocabulary that hinders understanding each of the content. The students faced with the shortage of the vocabulary which made idea will be distorted or completely not understood. As reported by

teachers of the deaf and identified through researcher observations the small morphological derivations, inflections, modifiers, lexical germination infixes (Amharic), prefixes, suffixes, inflectional affixes, inability to understand words in their tense structure and inability to understand linear relation of words were the major distorting factors. If they were exposed to and got appropriate feedback earlier, deaf learners could improve and became productive in academic achievements. In addition, some interview respondent teachers of the school explained that children who began learning sign language in their early age had better sign language expressing capacity than later beginners. He added that early sign language beginners were more computing in sign and academics than aged learners.

Furthermore, teacher participants and integrated school principals stated that teaching text book materials were produced for hearing students, in hearing culture. These hearing students had already mastered the language very well before coming to school. In contrary, deaf students came to school without language with a delay of 7 years. Many deaf children have limited sign language input as their parents, family members, and teachers usually do not have fluent signing skills/hearing parents. As to evaluation of teachers of the deaf, deaf students with hearing students with equal level learn and evaluated in the same grading system; unskilled teachers in sign language were going to teach them; textbooks provision did not considered deaf learners and deaf culture; poor teaching system of reading and writing, poor visual aids, resources, teaching conditions were obstructed, shortage of sign language with all these barriers deaf learners were struggling to overcome. These and other factors in connection with deafness impose the deaf child's academic achievement. This study reveals that the majority of the deaf learners were incompetent in academic performances and literacy skills.

For access curriculum, appropriate culturally and linguistically suitable teaching materials need to be available. The interviewee teachers reported that it is time of shifting the system of education. Stone (2000) suggested that there is a paradigm shift occurring in deaf education away from traditional “chalk and talk” instruction toward methods such as cooperative learning, active learning, and deaf-centered curricula, which alter content to better fit the interest and cultural orientations of deaf students.

Finally, the overall finding results implies that as one of the most significantly malleable factors within educational settings, specific attention needs to be paid to the role of the teacher in deaf education and ways to strengthen their teaching capacities. Teachers’ efficiency and skill are some of the characteristics consistently related to student achievement. Teachers with low knowledge and skill may feel that they lack the power to improve students’ achievement. Classroom observations confirm that most of the school teachers of the deaf schools lack the skill to teach deaf students. Particularly, in the development of literacy skill, teacher’s linguistic background and pedagogical background (how to teach deaf) are most crucial for the development of sign language and literacy enhancement as well as academic achievement.

Conclusion

The findings of this study indicate that deaf students (70.96%) of special schools for the deaf students were high Signed Amharic proficiency contributed to this study and similar (63.33%) of special school for the deaf students were high Signed English proficiency groups’ supply in this study. Integration schools’ signed language achievements were highly disappointing. The results show that significant differences exist in sign language proficiency between special and integration schools. This implies that the special school environment is linguistically better to facilitate sign language acquisition than

integration schools. Integration schools require due attention in sign language proficiency development.

In both languages, the high sign language proficiency groups achieved higher mean score than low proficiency groups. This reveals that deaf students with high proficiency could understand written materials better than low proficiency group. This shows that sign language proficiency plays a role in understanding print literacy.

The findings from the deaf learners’ questionnaire, interviews of deaf, teachers and principals and classrooms observations confirmed that there was sign language limitation in teaching and learning process. They reported that problems encountered during signing and academics teaching and learning process due to the lack of adequate sign language representation for all vocabularies in all subject areas. This indicated that schools were not linguistically rich to facilitate sign language acquisition for deaf learners and the teachers were not linguistic competence to deliver the curriculum through sign language.

On the other hand, the finding reveals that Total Communication follows the structure of Amharic and English, which deprived the linguistic development of the sign language. The reason is that unsatisfactory basis for normal first language development. Neither it is suitable for the development of second language. This reveals that total communication is weak in supporting to understand ideas easily to deaf learners. Most of the deaf students agreed that sign language would be given as a subject as a result deaf learner with sign language proficiency can be introduced with new terms, and it will help sign language to update every time.

The present results are fully consistent with the educational approach of teaching deaf students strategies to learn to recognize signs bilingual education. Sign bilingual approach recognition

is essential to the development of proficient academic achievement. Most of the study participants stated that language teaching system should be changed from preschool to high school for deaf learners. The study result indicates that recognizing the bilingual approach can familiarize both cultures of hearing and deaf. Empowering deaf learners in mother tongue could help to transfer the knowledge to the second language reading and writing. In turn, understanding the second language could help to understand academic achievement as well.

Regarding academic achievement, the study findings revealed that deaf students who received their instruction in special schools had higher academic achievement than those who received their instruction in integrated schools. Special schools may be better in specific support provided by the teacher of deaf, teaching method, organization of the schools, access to classroom communication and academic information. In integrated schools communication problem, language problem, dominance of hearing students, absence of supportive service and shortage of trained teachers may influence academic performances. Students with high signed Amharic/English proficiency achievement group performed higher mean score in all academic subjects than low signed Amharic/English proficiency group of deaf students. This showed that deaf students who had high sign language proficiency had better academic achievement. The finding revealed that there is high correlation between high sign language proficiency and high academic achievement $P > 0.01$.

These study findings revealed that high proficiency group demonstrated better reading and writing skills. The skill of reading and writing will contribute for better academic performances. Therefore, early sign language vocabulary input is necessary for deaf learners because a good language background is a good academic performance. Lack of full access to a complete language or delays in language

development can limit the leanings of academics. This shows that deaf students faced commonly in understanding the main point, reading and writing skills in learning process. Interview participants of deaf teachers reported that lack of strong sign language foundation to express what is wanted to transfer to deaf students was one of the problems. The second problem is limitation of sign language vocabulary hinders understanding each of the content because of this, concept of idea is distorted or completely not understood. Distortion and incomplete understanding of words lead to reading and writing difficulties. According to deaf teachers and researcher observations things that distort deaf learners understanding were small morphological derivations, inflections, modifiers, lexical germinations, infixes (Amharic), prefixes, suffixes, inflectional affixes, inability to understand words in their tense structure and inability to understand linear relation of words.

In schools, most of the teachers were not skillful in sign language and how to teach deaf. Deaf interview participants also addressed that teachers were not skillful in sign language. Respondents stated that teaching text book materials were produced for hearing students, in hearing culture. These hearing students before coming to school had already mastered the language very well. In contrary, deaf students came to school without language knowledge. Unskilled teachers in sign language were going to teach, text books provision did not considered deaf learners, deaf culture, poor teaching system of reading and writing, poor visual aids, shortage of resources in teaching, deaf learners struggling to overcome all these problems. These and other related factors and deafness impose the deaf child's academic achievement.

Here, phonological awareness plays a key role in reading and writing as well as academic achievement. This indicates that academic achievement was influenced by age of onset. This reveals that when deaf children entered

school with their appropriate age, they can learn meaningful language and perform better academic achievement than over-age groups.

This study revealed that majority of the deaf students was incompetent in academic performances and literacy skills. The findings of this study indicated that deaf students' academic performances in the mentioned schools of Addis Ababa were disappointing. Evidences show that there is no difference in cognitive abilities between deaf and hearing students and that deafness itself is not a factor, however, experiential deficits, language difficulties, and traditionally based instruction do negatively affect deaf students' building of schemata. To access curriculum, culturally fitting and linguistically suitable teaching materials needed to be available. Schools teachers' readiness and energetic ability to support deaf children could contribute for better academic achievement.

High signed Amharic/English proficiency deaf students showed better academic Achievement. This shows that language skill is highly associated with literacy and academic achievements. Early exposure to sign language and exposure to the reading and writing skill will improve the academic status of deaf children. If deaf citizens wanted to be competent in a society, they will need a change in language proficiency, literacy skill and academic educations. To do this, without preparation of teachers nothing can be expected. Deaf education teachers sufficiently and appropriately preparing will improve this disappointing academic conditions of deaf learners. Furthermore, reform based teaching approach in deaf education is needed. To this end, introduction to bilingual education is crucial to provide deaf children with the appropriate educational curricular to meet their educational needs in order to achieve academic success. Therefore, creating circumstances under which the educational needs of deaf children can be fulfilled.

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